CLAIMS

What is claimed is:

1. A cell search circuit comprising:

a splitter receiving received samples, and outputting a plurality of N sample sets;

N circuits receiving respective ones of the sample sets and providing respective absolute value outputs corresponding to a primary synchronization code correlation to each sample set;

N circuits providing accumulated values corresponding to the respective absolute value outputs; and

N circuits for dividing the accumulated values with an estimated noise value, and providing ratios of the accumulated values to the threshold.

2. The cell search circuit of claim 1 wherein a value of N is two and the sample sets are an even and odd sample set.

3. A cell search circuit comprising:

a code correlator for correlating a received signal with a primary synchronization code;

an auxiliary code correlator having a substantially similar length as the code correlator for correlating the received signal with a code having a low cross correlation with the primary synchronization code; and

a scaling circuit for scaling an output of the correlation with the primary synchronization code by an output of the auxiliary code correlator.

4. The cell search circuit of claim 3 wherein the code correlator and the auxiliary code correlator are hierarchal Golay correlators.

5. The cell search circuit of claim 3 wherein the code having a low cross correlation with the primary synchronization code has a low cross correlation with secondary synchronization codes.

6. The cell search circuit of claim 3 wherein the scaling circuit comprises a circuit performing a division function.

7. The cell search circuit of claim 3 comprising at least one additional code correlator for correlating the received signal with a primary synchronization code, the code correlator and each at least one additional code correlator processing a respective set of samples corresponding to a respective multiple N of a chip rate of the samples.

8. The cell search circuit of claim 7 wherein the auxiliary code correlator only receives one set of the respective sets of samples.

9. A cell search circuit comprising:

a code correlator for correlating a received signal with a primary synchronization code;

an accumulator for accumulating a result of the correlations of the received signal with a primary synchronization code;

a noise estimation circuit for estimating noise; and

a circuit for functionally dividing the accumulated result with the estimated noise by:

determining an index of the accumulated result indicating a most significant bit;

determining an index of the estimated noise indicating a most significant bit;

subtracting the estimated noise index from the accumulated result index; and

using a result of the subtraction to determine a division of the accumulated result by the noise estimate.

10. The cell search circuit of claim 9 further comprising taking a log of n bits at and following each index in the accumulated result and the estimated noise and subtracting the log of the n bits of the estimated noise from the log of the n bits of the accumulated result to determine a division of the accumulated result by the noise estimate.

11. The cell search circuit of claim 10 wherein the taking a log of the n bits is by using a look-up table for n-1 bit after the index.

12. A wireless transmit/receive unit (WTRU) for performing cell search comprising:

a splitter receiving received samples, and outputting a plurality of N sample sets;

N circuits receiving respective ones of the sample sets and providing respective absolute value outputs corresponding to a primary synchronization code correlation to each sample set;

N circuits providing accumulated values corresponding to the respective absolute value outputs; and

N circuits for dividing the accumulated values with an estimated noise value, and providing ratios of the accumulated values to the threshold.

13. The WRTU of claim 12 wherein a value of N is two and the sample sets are an even and odd sample set.

14. A wireless transmit/receive unit (WTRU) for performing cell search comprising:

a code correlator for correlating a received signal with a primary synchronization code;

an auxiliary code correlator having a substantially similar length as the code correlator for correlating the received signal with a code having a low cross correlation with the primary synchronization code; and

a scaling circuit for scaling an output of the correlation with the primary synchronization code by an output of the auxiliary code correlator.

15. The WTRU of claim 14 wherein the code correlator and the auxiliary code correlator are hierarchal Golay correlators.

16. The WTRU of claim 14 wherein the code having a low cross correlation with the primary synchronization code has a low cross correlation with secondary synchronization codes.

17. The WTRU of claim 14 wherein the scaling circuit comprises a circuit performing a division function.

18. The WTRU of claim 14 comprising at least one additional code correlator for correlating the received signal with a primary synchronization code, the code correlator and each at least one additional code correlator processing a respective set of samples corresponding to a respective multiple N of a chip rate of the samples.

19. The WTRU of claim 18 wherein the auxiliary code correlator only receives one set of the respective sets of samples.

20. A wireless transmit/receive unit for performing cell search comprising:

a code correlator for correlating a received signal with a primary synchronization code;

an accumulator for accumulating a result of the correlations of the received signal with a primary synchronization code;

a noise estimation circuit for estimating noise; and

a circuit for functionally dividing the accumulated result with the estimated noise by:

determining an index of the accumulated result indicating a most significant bit;

determining an index of the estimated noise indicating a most significant bit;

subtracting the estimated noise index from the accumulated result index;

using a result of the subtraction to determine a division of the accumulated result by the noise estimate.

21. The WTRU of claim 20 further comprising taking a log of n bits at and following each index in the accumulated result and the estimated noise and subtracting the log of the n bits of the estimated noise from the log of the n bits of the accumulated result to determine a division of the accumulated result by the noise estimate.

22. The WTRU of claim 21 wherein the taking a log of the n bits is by using a look-up table for n-1 bit after the index.